

**What is claimed is:**

1           1.    An apparatus for automatic identification of an  
2 external audio input/output device, comprising:

3           an audio jack;

4           a detecting device for automatically identifying the  
5                 external device according to an impedance of the  
6                 external device connected through the audio jack, and  
7                 generating a control signal; and

8           a multiplexer for selectively coupling the external device  
9                 to one of a plurality of audio circuits according to  
10                 the control signal.

1           2.    The apparatus as claimed in claim 1, wherein the  
2 external device is for inputting an audio signal or outputting  
3 an audio signal.

1           3.    The apparatus as claimed in claim 1, wherein the  
2 detecting device and the external device are connected to be a  
3 potential divider, and the control signal is the voltage signal  
4 outputted from one of a plurality of dividing points of the  
5 potential divider.

1           4.    The apparatus as claimed in claim 3, wherein the  
2 detecting device is for selectively connecting one of a plurality  
3 of resistors of the detecting device to form the potential  
4 divider.

1           5.    The apparatus as claimed in claim 3, further comprising  
2 an Analog to Digital Converter (ADC) for converting the control  
3 signal to be a digital signal.

1           6. The apparatus as claimed in claim 5, further comprising  
2 a controlling unit for determining the type of the external device  
3 according to the digital control signal, and the multiplexer  
4 selectively couple the external device to the audio input circuit  
5 or the audio output circuit via the audio jack according to the  
6 digital control signal.

1           7. The apparatus as claimed in claim 6, wherein the  
2 controlling unit disconnects the connection between the  
3 detecting device and the external device according to the digital  
4 controlling data.

1           8. The apparatus as claimed in claim 6, wherein the  
2 controlling unit is for detecting whether or not the external  
3 device is connected to the audio jack, and controlling the  
4 connection between the detecting device and the external device  
5 accordingly.

1           9. The apparatus as claimed in claim 1, wherein the  
2 detecting device determines the type of the external device  
3 through comparing the impedance of the external device with a  
4 recognition parameter.

1           10. The apparatus as claimed in claim 9, wherein the  
2 recognition parameter is stored in a registry, or a programmable  
3 memory, or a software file.

4           11. The apparatus as claimed in claim 1, wherein each of  
5 the audio circuits is either an audio input circuit or an audio  
6 output circuit.

1 12. A method for automatic identification an external  
2 audio input/output device, comprising the steps of:  
3 measuring an impedance of the external device connected with  
4 an audio jack;  
5 generating a controlling signal according to the impedance  
6 of the external device; and  
7 selectively coupling one of a plurality of audio circuits  
8 to the external device via the audio jack according  
9 to the controlling signal.

1 13. The method as claimed in claim 12, wherein step of  
2 measuring further comprises the steps of:  
3 connecting a detecting circuit with the external device to  
4 form a potential divider;  
5 measuring an output voltage of the potential divider; and  
6 converting the output voltage to the controlling signal.

1 14. The method as claimed in claim 13, further comprising  
2 disconnecting the connection between the detecting circuit and  
3 the external device after measuring the impedance of the external  
4 device.

1 15. The method as claimed in claim 13, wherein the step of  
2 formation the potential divider further comprises selectively  
3 connecting one of a plurality of resistors to the external device  
4 individually.

1 16. The method as claimed in claim 13, wherein the step of  
2 converting the output voltage into a corresponding controlling  
3 signal comprises comparing the output voltage with a recognition  
4 parameter.

1 17. The method as claimed in claim 16, wherein the  
2 recognition parameter is programmable.

3 18. The method as claimed in claim 12, wherein each of the  
4 audio circuits is either an audio input circuit or an audio output  
5 circuit.

1 19. A method for automatically identifying an external  
2 audio input/output device, comprising the steps of:  
3 detecting whether the external device is connected to an  
4 audio jack;  
5 measuring an impedance of the external device;  
6 converting the measured impedance to a corresponding  
7 controlling signal; and  
8 selectively coupling one of a plurality of audio circuits  
9 to the external device via the audio jack according  
10 to the controlling signal.

1 20. The method as claimed in claim 19, wherein the step of  
2 measuring comprises the steps of:  
3 connecting a detecting circuit with the external device to  
4 form a potential divider;  
5 measuring an output voltage of the potential divider; and  
6 converting the output voltage into the controlling signal.

1 21. The method as claimed in claim 20, further comprising  
2 disconnecting the connection between the detecting circuit and  
3 the external device after measuring the impedance of the external  
4 device.

1           22. The method as claimed in claim 20, wherein the step of  
2 forming the potential divider further comprises selectively  
3 connecting one of a plurality of resistors to the external device  
4 one individually.

5           23. The method as claimed in claim 19, wherein each of the  
6 audio circuits is either an audio input circuit or an audio output  
7 circuit.